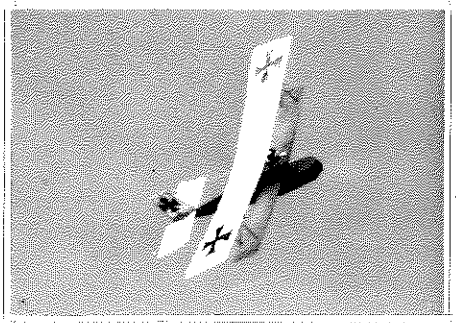
SAND FLI

By BOB BANKA . . . An entertaining little biplane for one or two 1/2A engines (depending on your flying agility!) that can be built in a relatively short time and requires only two channels of R/C.



• After living in Canada, Chicago, and Michigan, I finally moved to sunny Southern California and lucked out to end up living on the beach, looking at the Pacific Ocean. Mile Square, one of the state's best known flying sites, is about 20 minutes away, but, being selfish, I wanted to be able to fly in my front yard. VIOLA! the Sandfli came into existence. The motor is out of the sand (dirt, grass, snow, etc. for those of you living away from the beach) its next to impossible to break a prop, and who knows, it might even be at home in the water!

The Sandfli is a highly maneuverable fun plane patterned after the pre-1920s Schneider Cup racers. It is easy to build, and was designed built, and flown within one week. It can fly as well on one wing as with two, with either a tractor, pusher, or twin-engine configuration. Using Cox Tee-Dee(s), it will easily loop, roll, snap, spin, lousy invert, and turn on a dime and give you nine cents change. A young friend, John, who has soloed, did his first snap roll and spins on my Sandfli, and wants to be one of the first to build one.

I like to believe that we build models to fly and not to crash, so keep it light and it increases your enjoyment level; the beefing up comes in the struts supporting the motor and wings as there is very little stress on the balance of the model.

CONSTRUCTION NOTES AND GUIDELINES

Main wing is very straightforward and simple. Trace a rib pattern on stiff cardboard or 1/16 ply. Cut 18 ribs, pin together and stack-sand, clean up notches for leading and trailing edges and spars. Cut down two ribs to allow for center sheeting and trim down two more ribs to allow space for dihedral braces in center section.

Lower wing and struts are held in place with bands. Cut 1/16 slot in inboard rib, but do not glue tongue in place until upper wing can be mounted on body. Construct "N" struts so that wings are parallel to upper wing (sand strut bottoms to fit, but don't glue in place until wings are covered. At that point, insert and glue toothpick or dowel alongside of strut to strengthen the joint.) When wing tongues are inserted into body slot and upper wing is in place, all it takes is a couple of bands over the wing to hold it in place. When all is lined up, you can glue the plywood tongue in place on the first and second ribs, beef up the top and bottom at this joint with scrap balsa, and you have a solid attachment for the lower wing. Glue in another scrap of balsa between the two ribs against the ply tongue to receive the screw that will hold the two lower wings to the body with a pair of rubber bands. The screw should be long enough to pass through the balsa into the ply tongue for maximum strength. Leave head exposed about 1/8 inch for band attachment.

Tail surfaces are built up for visual effect and lightness, since they had to be covered anyway (I recommend *not* painting, use iron-on covering). You can make them out of 1/8 sheet of you wish. I used figure-8 thread hinges for ease of installation and freedom of movement. The 1/16 wire elevator joiner was also sewn in place, followed by a drop or two of Hot Stuff and a dusting of baking soda. At any rate, cover the surfaces before hinging.

Body (Hull?): Cut two sides of medium to hard 3/32 sheet. Mark position of formers and particularly the vertical struts. Epoxy struts in place, add doublers and formers. Dimensions are set for a Tee-Dee .049-.051 using a one or two ounce Sullivan tank and a 6 inch prop. If you plan to really go wild with a .10 size, adjust height accordingly to accommodate larger prop and tank. Epoxy the cross supports and diagonal side struts, use triangle supports as indicated, and some good insurance would be to drill holes and insert dowels or toothpicks at junction points to help hold everything together better. Motor mounts of 1/4 square hardwood are bolted in place and tank rests on mounts. If you are adventuresome as I was, you can extend the mounts to the rear to allow for pusher, or twin operation. If you opt for this, recheck balance point, as you will have to add weight to the nose in this configuration. I will warn you that as a twin, the Sandfli goes like a bat out of hell, and maneuvers are quick to say the least.

Ah . . . but what a sweet sound twin Tee-Dee's make, and when one engine kills, you can still fly without interesting changes in direction, since both are on the same thrust line. For twins, you can modify a two or three ounce tank by cutting a round hole in the rear of the tank to accommodate a typical Sullivan tank stopper, but instead of using a clunk on the rear stopper, make a tube with a bend downwards to pick up the fuel and leave the front end stock to feed the front engine. To finish the body (hull), measure servos to find out where they will be mounted with about a 1/4 inch clearance above servo wheels to top of body sides. The balance of your gear should easily fit in space provided, unless equipment is unusually large.

Glue two 3/16 keels together (see, maybe it is a hull) and glue into place, sand bottom to achieve flat surface to glue hard 3/32 sheet cross grained to bottom. Glue nose block into place and shape body. I covered body with Fabri-Kote so I could resin a piece of nyrod onto the hull after cutting a V-groove and tacking it into place with Hot Stuff. I then masked off a line about a 1/4 inch high around bottom sides of hull and resined the whole front bottom area to help resist abrasion from landings. After over 40 flights with essentially no damage (including landing on concrete), I feel this is a smart move.

Remember the ply tongue on the lower wing? Now is the time to epoxy the horizontal strut 1/16 above the body line and add balsa scrap fill to establish where the tongue will fit in the body. The tongue also serves the purpose of holding down the hatch cover when the lower wings are inserted. Hold the wings in place by attaching at least two bands between the screws in the lower wing. Over 40 flights have been made using this method and it has created no problems, as there is little stress in this area. Install pushrods, cover top, and bottom of body with 1/16 crossgrained, and glue on tail feathers after covering and hinging. Complete the hatch cover and brace on bottom to strengthen and resist warping. Watch to allow clearance of servo and pushrod action. Fuelproof struts and motor mounts. Charge your batteries and let's go fly after attaching pushrods to outside holes in the control horns! (The Sandfli tends to be RESPONSIVE!)

I'd suggest using the tractor configuration only for the first flight if you have opted for the twins. If you build light, it should weigh in about 27-30 oz., and balanced well, it will amaze you at its ability to tear up the sky in a very small space. When you hand launch keep the nose level and it should climb out with ease. It looks funky up there with two wings, and lands like a dream when you run out of gas. When you fly it on just the top wing (yup it does) the Sandfli will raise your excitement level. Just remember to hold down the hatch with a scrap of 1/16 and be prepared. With less resistance and area, things get peppy. Good luck and give me your reactions. •